

# WINTER DISTRIBUTION OF ROBINS EAST OF THE ROCKY MOUNTAINS<sup>1</sup>

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DISTRIBUTION DURING DECEMBER, JANUARY, AND FEBRUARY

MUCH has been written dealing with the distribution of American Robins (*Turdus migratorius*) during the winter months, mostly from the point of view of specific occurrences at given localities. Robins have been recorded wintering from St. Johns, Newfoundland, in the northeast, to Winnipeg, Manitoba, in the northwest, and south into Mexico.

Cooke (1884) gave a very good account of Robin distribution during one winter. He stated: "During the larger part of the month of January the bulk of the Robins, and probably even ninety-five to ninety-seven per cent, were south of the parallel of 37°. This is south of the usual limit, the northern boundary for ordinary winters being 39°."

The A.O.U. Check-List (1931:255-256), apparently following Cooke in regard to the northern boundary, states that the Robin "Winters from central Kansas, Ohio Valley, and eastern Massachusetts (irregular farther north) to the Gulf coast and southern Florida, and to Nuevo Leon, Mexico."

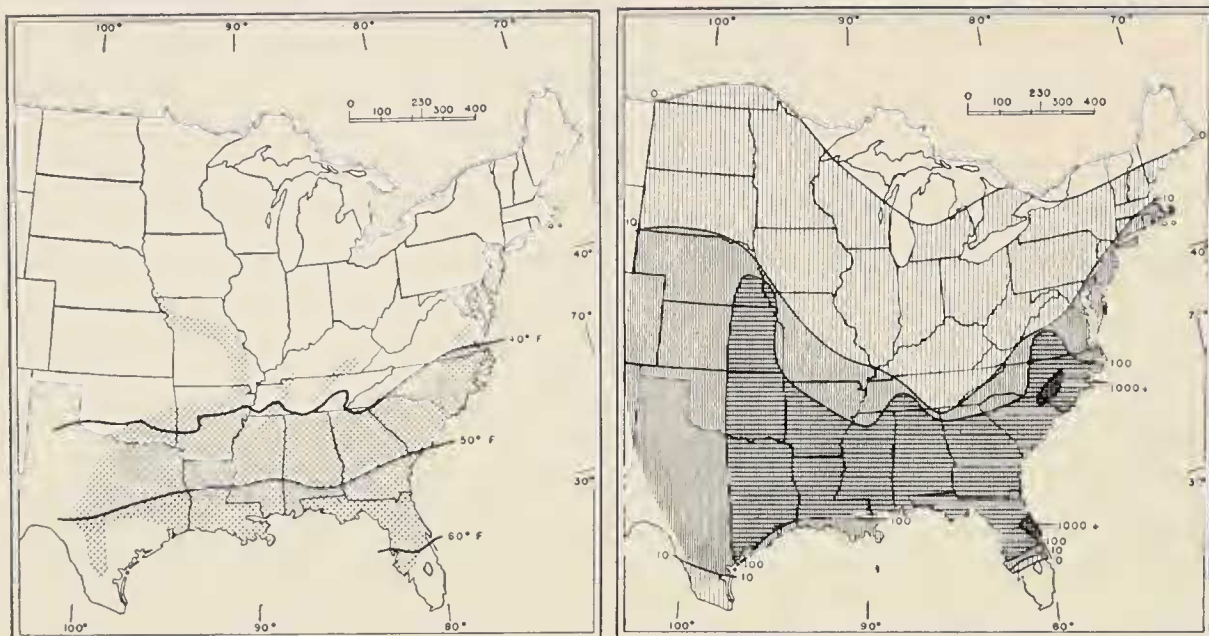
Several authors have shown that Robins occur quite regularly in many localities north of the Cooke-A.O.U. boundary, from Nova Scotia in the east to northern Minnesota in the west (Lewis, 1919; Roberts, 1932:112-113).

The most northerly winter records of Robins I have found in the literature and from correspondence include Winnipeg, Manitoba (Cartwright); Fort Frances, Ontario (Robertson); Port Arthur, Ontario (Allin); Ottawa, Ontario (Eifrig); Point des Monts, Quebec (Comeau); and St. Johns, Newfoundland (Hawley). Robins winter regularly in small numbers as far north as the lower Great Lakes, and large numbers have occasionally been reported in winter from Duluth, Minnesota, and from Cleveland, Ohio.

Brooks (1934) published a map showing for each state and province (1) the number of Christmas bird censuses which had been made during the previous 34 years, (2) the number of censuses on which Robins were seen, and (3) the number of individual Robins seen. This map shows that, in the 34-year period, some Robins had been reported from every state east of the Rocky Mountains (except Vermont) and from the provinces of Ontario and Quebec.

<sup>1</sup> Contribution from the Zoological Laboratory of the University of Illinois.

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MAP 1 (left). Winter range of Robins as indicated by banding recoveries (but see also Map 2). The crosshatched area includes localities from which banded Robins have been recovered in December, January, and February. The heavy lines indicate the average positions of the 40°F, 50°F, and 60°F isotherms for January (Kincer, 1928). The December and February isotherms are slightly farther north.

MAP 2 (right). Relative density of Robin populations in late December. The degree of shading indicates the density of Robin populations in late December, as indicated by Christmas censuses taken in 1938, 1939, and 1940. No Robins were reported on censuses taken north of the upper line; less than 10 Robins per census party were observed in the most lightly shaded area between the two upper lines; between 10 and 100 Robins per census party were reported in the next most heavily shaded area; over a hundred Robins per census party were reported in the area indicated by cross hatching; the darkest areas indicate regions where over a thousand Robins per census party were reported.

On September 13 and 14, 1940, Doris H. Speirs and the writer were given access to the Robin banding records in the files of the U. S. Biological Survey (now U. S. Fish and Wildlife Service) at Washington. We listed all records for Robins recovered at localities more than 50 miles distant from the station where they were originally banded, for all states and provinces east of the Rocky Mountains. Maps similar to Maps 4, 5, and 6 have been prepared for each of these states and provinces, showing corresponding points of banding and recovery.

Map 1 shows the 348 localities where 405 banded Robins were recovered during the months of December, January, and February. One locality is not shown (a Robin was recovered in December at Pachuca, Hidalgo, Mexico—about 800 miles south of San Antonio, Texas). Most of the winter recoveries have been in the Gulf States and the Atlantic Coast States from Florida to North Carolina. Actually 79 per cent of the recoveries have been from the Gulf States and 99 per cent have been south of 37° N. latitude.

Map 2 summarizes the Robin population data from the 1938, 1939, and 1940 "Christmas censuses" published in *Bird-Lore* and the *Canadian Field-Naturalist*. A comparison of Maps 1 and 2 will show that the area in which banded Robins were recovered in winter corresponds fairly closely with the area in which densities of more than one hundred Robins per census party were reported.

Maps 1 and 2 indicate that the area of greatest abundance in winter lies between the latitudes of  $30^{\circ}$  and  $35^{\circ}$  N. latitude, with extensions northward into eastern North Carolina and central Tennessee, and southward into the peninsula of Florida and into the wooded regions in southeastern Texas. It will be seen that this excludes the southern tip of Florida, southern Texas, northern Mexico, and from the Ohio Valley to eastern Massachusetts, all of which are included in the winter range as defined in the A.O.U. Check-List. From Map 2 it will be seen that there is a population of Robins north of the region of greatest abundance until at least as late as the Christmas season.

#### RELATIONSHIP BETWEEN WINTER DISTRIBUTION AND TEMPERATURE

Allard (1928:390) remarks: "It is said [by Cooke, 1904:384–385] that the Robin's migratory movements are determined by a temperature of  $35^{\circ}$  Fahrenheit yet something makes him quietly forget this so-called determining point in the south throughout the winter." Eifrig (1922:92) wrote that during the mild winter of 1920–21 "there were more Meadowlarks and Robins remaining all winter a few miles south [of Chicago] than usual, but nothing striking." Forbush (1923) wrote: "Robins . . . survived temperatures of 40 below zero" in New England during the winter of 1922–23. Jones (1923) said, "the mild winter . . . made it possible for many birds [including Robins] to spend the winter [1921–22, 1922–23] well north of their usual range." Roads (1930) noted that the Robins were "unusually common" during the open winter of 1928–29 at Hillsboro, Ohio.

Allard's criticism of Cooke's  $35^{\circ}$  "determining point" is an indirect criticism of Cooke's use of "arrival" dates to represent the time of migration of the species. Cooke was dealing with the earliest birds noted in spring and the latest noted in autumn, whereas Allard was referring to the bulk of the Robin population. Several of the authors quoted above imply that appreciable numbers of Robins occur in the northern states only during unusually mild, or open, winters, whereas Forbush showed that some Robins can survive very low temperatures.

From Map 1 it will be seen that the majority of the winter recoveries of banded Robins have been made in the region lying between the average positions of the  $40^{\circ}$  F and the  $60^{\circ}$  F January isotherms. Actually, only about



6 per cent of the winter recoveries occurred in regions north or south of these isotherms.

The 40° F isotherm for January corresponds well with the northern boundary of the region in which less than 15 days per winter have continuously freezing temperatures. In this region it is to be expected that, generally, Robins would be able to find unfrozen ground and a supply of animal food. Temperature, however, is not the only factor important in determining the winter distribution of Robins, as is indicated by the comparative scarcity of Robins in western and southern Texas, much of which lies between the 40° F and 60° F isotherms in January.

#### WINTER DISTRIBUTION AND ECOLOGICAL RELATIONSHIPS

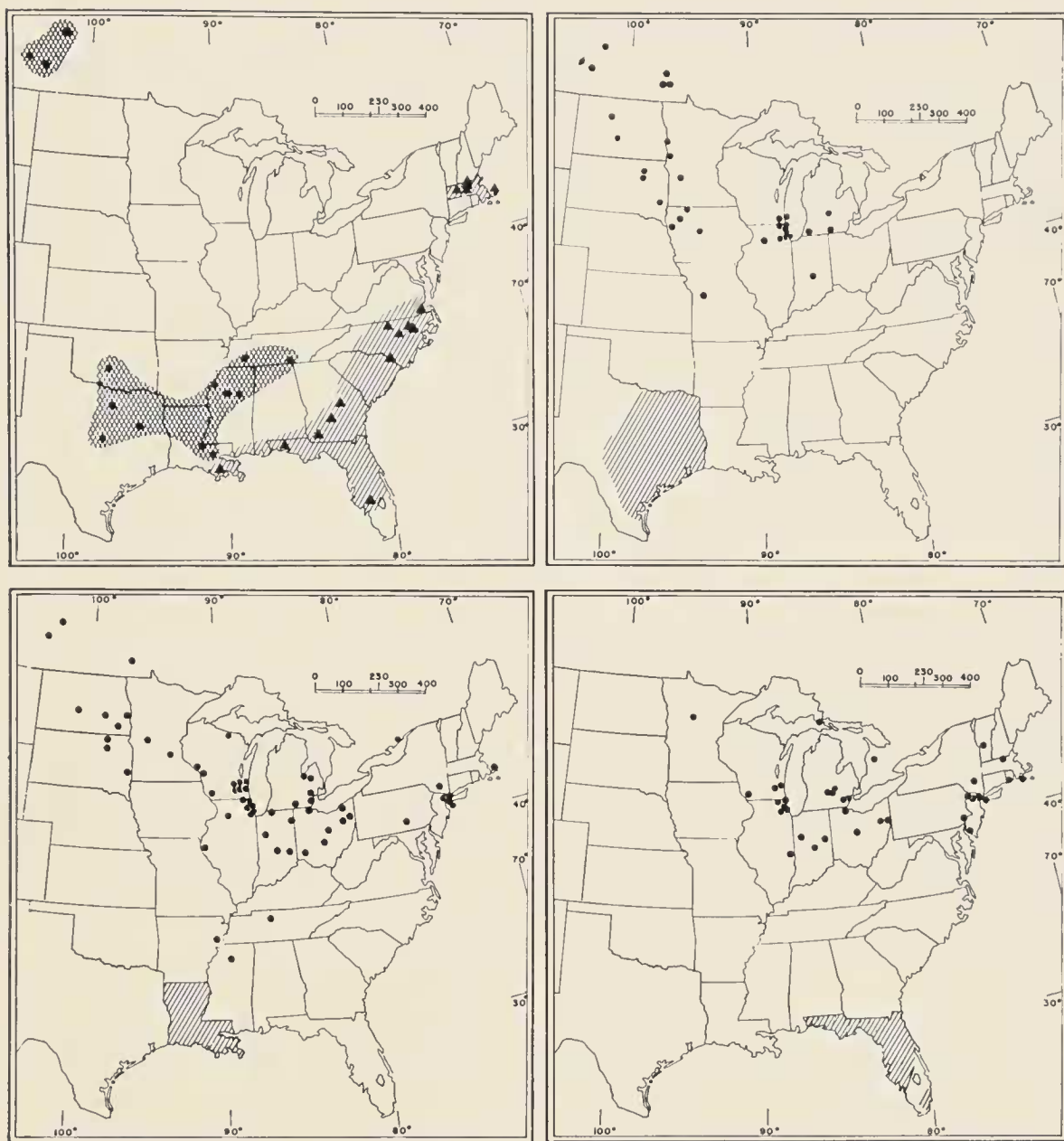
An abundant literature has dealt with the kinds of berries eaten by Robins at different localities in winter, with the importance of fresh water as well as food, with the types of roost cover (mostly low, dense growth), and to some extent with the general habitat type in particular localities. For details see Black (1932); Corrington (1922); Fargo (1926, 1928); Forbush (1925, 1929: 408); Ganier (1924); Gardner (1933); Hicks (1934); A. H. Howell (1932); Hunt (1921); Larson (1928:110); Lewis (1919); May (1924); McIlhenny (1936, 1940); Miller (1922); Nuttall (1832:338) and Stone (1937:768-773). Cooke (1884:106) stressed the importance of food as a factor in the winter distribution, while Howell (1940, MS) pointed out that insects as well as wild fruits were important as Robin food, particularly in the late winter.

The region in which Robins are most abundant in winter (as shown in Maps 1 and 2) corresponds very closely with the oak-pine and the pine associates of the deciduous forest biome. Even the outlying recoveries shown in Map 1 occurred in wooded areas. The lack of recoveries from the mesquite areas of southern Texas, from the prairies of western Texas, and from the coastal grasslands of Texas and southern Florida indicates that forested areas as well as favorable temperatures are winter habitat requirements.

Observers in the Southern States have found Robin roosts in such evergreens as camphor trees, junipers, bay, gallberry, small pines, cane, cedar, and magnolias. The tendency of Robins to winter in the pine and oak-pine associates, rather than the surrounding regions, may be due to the abundance of good roosting cover in these associates as much as to the greater prevalence and variety of food, though the latter has hitherto been stressed in the literature.

#### LATITUDINAL RELATIONSHIP OF WINTER AND BREEDING DISTRIBUTIONS

Cooke (1904:374) wrote: "Probably no individual robin is a continuous resident in any section; but the robin that nests, let us say, in southern Mis-



MAP 3 (upper left). Winter recoveries of Robins banded in Saskatchewan (11 birds banded between March 29 and July 23) and in Massachusetts (12 birds banded between April 22 and October 21).

MAP 4 (upper right). Place of banding of 58 Robins (banded during the summer season) recovered in Texas in winter.

MAP 5 (lower left). Place of banding of 116 Robins (banded during the summer season) recovered in Louisiana in winter.

MAP 6 (lower right). Place of banding of 60 Robins (banded during the summer season) recovered in Florida in winter.

souri, will spend the winter near the Gulf, while his hardy Canada-bred cousin will be the winter tenant of the abandoned summer home of the southern bird." This concept of a hardy population of Robins from the north coming

south in autumn and displacing the summer residents which then go still farther south to winter has been widely accepted (Forbush, 1929: 408, and Lincoln, 1939:69).

The following analysis of banding data does not support this view. Of 273 Robins banded north of  $40^{\circ}$  N., the average latitude of winter recovery was  $32.0^{\circ}$  N. For the 51 of these Robins banded north of  $45^{\circ}$  N., the average latitude of winter recovery was  $31.9^{\circ}$  N. For the 17 banded north of  $48^{\circ}$  N., the average latitude of winter recovery was  $32.1^{\circ}$  N.

For 46 Robins banded at stations south of  $40^{\circ}$  N., the average latitude of winter recovery was  $32.2^{\circ}$  N. For the six of these banded south of  $37^{\circ}$  N., the average latitude of winter recovery was  $33.0^{\circ}$  N. These data show a tendency for Robins from all latitudes of their breeding range to winter in about the same average latitude ( $32^{\circ}$  N.). The only tendency to deviate from this, shown by the above analysis, is for the Robins breeding in the most southerly latitudes to winter slightly farther north than those breeding in the north. However, the data for the south are too scanty to more than suggest this tendency at present. The following additional cases may be cited as evidence against Cooke's displacement theory.

An immature Robin, banded at Nashville, Tennessee ( $36.1^{\circ}$  N) by Amelia R. Laskey on June 11, 1936, was found dead at Mt. Juliet, Tennessee (about 15 miles east of Nashville), the following February 14, 1937. Laskey (1947) also reported on a pair of color-banded Robins which nested in her garden at Nashville in July, 1945, and wintered there from December 27, 1945, to March 24, 1946, when the male was killed by a dog.

One Robin was banded at Auburn, Alabama ( $32.6^{\circ}$  N.) on March 6, 1931, and recovered in winter *farther north* than this, at Guntersville, Alabama ( $34.4^{\circ}$  N.) on February 1, 1934. Incidentally, so far as I am aware, this is the farthest south that a Robin has been banded and later recovered more than 50 miles from the banding station.

#### LONGITUDINAL RELATIONSHIPS OF WINTER AND BREEDING DISTRIBUTIONS

Several writers have analysed the winter recoveries of Robins banded in particular localities or states: *e.g.*, Beals and Nichols (1940); Brooks (1931: 27); Commons (1938:231); Howell (1940, MS); and Lincoln (1939:134–135). Howell (1940, MS) pointed out the tendency for most of the Robins from Illinois and Iowa to winter directly south of these states, whereas the Massachusetts population wintered mainly in the Atlantic coast states and the Saskatchewan population, mainly in the Gulf coast states. The analyses have generally shown a wide spread in the winter recoveries of Robins which had been banded in relatively small areas, though the majority of the recoveries have been from almost directly south. Exceptions are far eastern birds forced



westward by the Atlantic and far western birds deflected eastward by the prairie. These findings have been corroborated and extended by my study.

Map 3 shows that the bulk of the Saskatchewan Robins winter considerably farther west than the bulk of the Massachusetts Robins, although there is a large overlap in the longitudes of the recoveries from the two regions.

Maps 4, 5, and 6 show that most of the Robins wintering in Texas come from the west, that most of the Robins wintering in Florida come from the east, and that most of the Robins wintering in Louisiana come from the central part of the country. No Robins from the far east have been recovered in Texas, and no Robins from the far west have been recovered in Florida, but Robins from the central area have wintered to some extent in both: and Robins from both far east and far west have wintered in the central south (Louisiana).

#### SUMMARY AND CONCLUSIONS

Analyses of the winter recoveries of banded Robins and of Christmas bird counts indicate that the area in which Robins are most abundant in winter lies between the latitudes  $30^{\circ}$  N. and  $35^{\circ}$  N., and extends northward into eastern North Carolina and central Tennessee; southward it includes the peninsula of Florida (north of the everglades) and the wooded regions of southeastern Texas. This winter range differs from that given in the A.O.U. Check-List (1931) in excluding, in the south, the southern tip of Florida, southern Texas, and northern Mexico and, in the north, the Ohio Valley to eastern Massachusetts. The status of the Robin north of this area of greatest abundance is indicated.

Banding evidence indicates that 94 per cent of the Robin population winters between the  $40^{\circ}$  F. and the  $60^{\circ}$  F. isotherms. Robins are most abundant in winter in the pine and oak-pine associates of the deciduous forest biome. They decrease in abundance in non-forested or poorly forested areas westward.

Most northern Robins winter in the same latitudes as Robins raised in the south. Robins breeding in the east tend to winter farther east than Robins breeding in the west, but some overlapping occurs.

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